1. A method for photonic transceiving, the method comprising:

providing a received photonic signal having a received wavelength;

spectrally replicating the received photonic signal to provide a replicated photonic signal; and

narrowband filtering the replicated photonic signal to provide a transmitted photonic signal.

2. The method of claim 1, wherein narrowband filtering further comprises tuning to an arbitrary wavelength range.

3. The method of claim 1, wherein narrowband filtering comprises:

circulating the replicated photonic signal to provide a circulated photonic signal;

selectively reflecting the circulated photonic signal to provide a reflected photonic signal; and

circulating the reflected photonic signal to provide the transmitted photonic signal.

4. The method of claim 1, wherein spectrally replicating comprises wavelength shifting.

5. The method of claim 4, wherein wavelength shifting comprises:

modulating the received photonic signal in accordance with a modulation waveform to provide a shifted photonic signal having a shifted wavelength; and

providing the modulation waveform encoded to shift the received wavelength to the shifted wavelength.

6. The method of claim 5, wherein the modulation waveform is encoded to shift the received wavelength to a plurality of shifted wavelengths.

7. The method of claim 1, wherein spectrally replicating comprises recursive wavelength-shifting.

8. The method of claim 7, wherein recursive wavelength-shifting comprises:

combining a shifted photonic signal having a shifted wavelength with the received photonic signal to provide a combined photonic signal;

amplifying the combined photonic signal to provide an amplified photonic signal;

splitting the amplified photonic signal to provide the replicated photonic signal and a photonic feedback signal having a feedback wavelength; and

wavelength-shifting the photonic feedback signal to provide the shifted photonic signal.

9. The method of claim 8, wherein wavelength-shifting comprises:

providing a modulation waveform effective to shift the feedback wavelength to the shifted wavelength; and

modulating the photonic feedback signal in accordance with the modulation waveform to provide the shifted photonic signal.

10. The method of claim 1, wherein spectrally replicating comprises spectral comb replication.

11. The method of claim 8, wherein spectral comb replication comprises:

splitting the received photonic signal to provide first and second received photonic signals;

recursively wavelength shifting the first received photonic signal with a positive wavelength shift to provide a first replicated photonic signal;

recursively wavelength shifting the second received photonic signal with a negative wavelength shift to provide a second replicated photonic signal; and

combining the first and second replicated photonic signals to provide the replicated photonic signal.

12. The method of claim 1, wherein spectrally replicating comprises four-wave-mixing.

13. The apparatus of claim 12, wherein four-wave mixing comprises:

providing a photonic mixing signal having at least one mixing wavelength;

combining the received photonic signal with the photonic mixing signal to provide a combined photonic signal;

providing non-linear amplification of the combined photonic signal to provide a non-linear photonic signal; and

splitting the non-linear photonic signal to provide the replicated photonic signal.

14. The method of claim 1, wherein spectrally replicating comprises recursive four-wave-mixing.

15. The method of claim 14, wherein recursive four-wave-mixing comprises:

providing a photonic mixing signal having a mixing wavelength;

combining a photonic feedback signal with the received photonic signal and the photonic mixing signal to provide a combined photonic signal;

providing non-linear amplification of the combined photonic signal to provide a non-linear photonic signal; and

splitting the non-linear photonic signal to provide the replicated photonic signal and the photonic feedback signal.

16. A method for photonic spectrum replication by complementary recursive wavelength-shifting, the method comprising:

providing a received photonic signal;

splitting the received photonic signal to provide first and second photonic daughter signals;

recursively wavelength-shifting the first photonic daughter signal with a positive wavelength-shift to provide a first replicated photonic signal;

recursively wavelength-shifting the second photonic daughter signal with a negative wavelength-shift to provide a second replicated photonic signal; and

combining the first and second replicated photonic signals to provide a totally replicated photonic signal.

17. The method of claim 16, wherein recursive wavelength-shifting comprises:

providing a photonic input signal;

combining a shifted photonic signal having a shifted wavelength with the photonic input signal to provide a combined photonic signal;

amplifying the combined photonic signal to provide an amplified photonic signal;

splitting the amplified photonic signal to provide a photonic output signal and a photonic feedback signal having a feedback wavelength; and

wavelength-shifting the photonic feedback signal to provide the shifted photonic signal.

18. The method of claim 17, wherein wavelength-shifting comprises:

providing a modulation waveform effective to shift the feedback wavelength to the shifted wavelength; and

modulating the photonic feedback signal in accordance with the modulation waveform to provide the shifted photonic signal.